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AUTHOR Aquino, Felix J.
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ABSTRACT

This paper describes the process by which Dallas County Community College District (Texas) developed and operationalized a student typology for assessing student outcomes. The purpose of the typology is to assist in identifying at risk students and increasing their chances of academic success while simultaneously allowing for the diversity of student goals, needs, and abilities found at a community college. After a discussion of the institutional context of the creation of the typology, there is a brief description of the typology itself which is based on the two key variables of initial course load and stated intention (e.g., degree, job related, personal interest) and its use as a success model, including the formulation of success indicators dependent on student classification, and its use in outcomes assessment. The paper also deals with the conceptual and organizational challenges which must be met in order for the typology to become a useful tool in improving student outcomes. (GLR)

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OPERATIONALIZING A STUDENT TYPOLOGY:

STEPS TOWARD BUILDING A COMMUNITY COLLEGE SUCCESS MODEL

Felix J. Aquino

Dallas County Community College District
Office of Research
701 Elm Street
Dallas, TX 75202

214-746-2192

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for Management Research, Policy Analysis, and Planning

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Jean Endo
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The process by which a community college student typology is operationalized is described. After a discussion of the institutional context of the creation of the typology, there is a brief description of the typology itself and its use as a success model and in outcomes assessment. The paper also deals with the conceptual and organizational challenges which must be met in order for the typology to become a useful tool in improving student outcomes. The intended audience is any higher education professional interested in student outcomes, assessment, and institutional change.

Introduction

The following paper builds upon a typology of community college student behaviors which was presented in the 1990 AIR Forum (Aquino 1990). In that typology entering students at the Dallas County Community College District (DCCCD), a large multi-campus urban community college district are grouped into twelve categories according to initial course load and stated intentions, with success indicators identified for each type. The totality of the expected outcomes with respect to these success indicators form the core of a community college student success model. This paper will discuss the intellectual and organizational challenges to operationalizing a student typology so that it becomes a useful tool in improving student outcomes.

Background of the Discussion

In recent years the topic of student success and student failure in community colleges has experienced renewed vigor. In large part this is due to the current nationwide interest in institutional assessment.

However, in a community college context student assessment has historically proved to be very difficult because the

traditional higher education success measures, graduation and retention rates, have proved to be highly inadequate for community colleges. In the first place, community colleges have historically had very low graduation and retention rates compared to their four-year counterparts. Of course, this is an unfair comparison, based on the assumption that most community college students begin their postsecondary education with the intention of earning an associate degree after two years of full-time study. By now it is well known that community colleges, in addition to addressing the needs of 18 and 19 year old full-time, degree-seeking students, also serve a wide variety of people, from displaced homemakers and workers, to people wishing to upgrade job skills, to people simply taking courses for pleasure. Clearly, the relative success of such a broad gamut of students and student intentions cannot be measured by a single yardstick. However, by community colleges' insistence on the relativity of student success they have tended to avoid confronting the issue of exactly what is meant by the term "student success" in the community college context. This issue has become especially pertinent because under the imperatives of assessment and accountability community colleges are being asked to document student success.

Of course, assessment has another side, that of institutional improvement. Within this realm an area which has received much attention as of late is that of identifying at risk students and increasing their chances of success. However, at least in community colleges, the issue is not so cut and dried.

When we speak of at risk students the implication is that the students are at risk of failing. However, if we do not have a good idea of what success in the community college is, do we have any better idea of what failure is?

In light of these considerations, the DCCCD leadership in the form of the Chancellor's Cabinet (college presidents along with the three vice chancellors and chancellor) commissioned the DCCCD Office of Research to develop a method for rigorously assessing student outcomes while at the same time allowing for the diversity of student goals, needs, and abilities found at a community college. It was decided that the best way of solving this problem was to find a way of clustering students into some form of categorizations which made sense and develop success criteria for each student category, i.e., formulate a student typology.

A full description of the assumptions and methodologies behind the development of the typology is covered elsewhere (Aquino 1990) and is outside the scope of this paper. However, we can review the conditions which the student typology had to fulfill in order to be successful:

a) It must be based on data, not on a priori notions of what student behavior should be.

b) It must be value neutral. A student's belonging to one type or another must not imply any kind of value judgement of any kind. Thus, a type like "students who should not be in college" is precluded.

c) It must be manageable. This implies that there must be an upper limit on the number of types in the typology; too many types would make it unwieldy.

d) It must make intuitive sense. That is, the typology must not appear idiotic or frivolous to the deliverers of services to students.

e) It must suggest success indicators for each type.

f) It must assign students to a type as early as possible in their collegiate careers. Post hoc typologies are of no use in identifying students for special interventions. Indeed, the intention at the DCCCD was that the typology not be an academic exercise but a tool for improving student success; a typology that could not be used as such would be useless.

The Typology

The typology was constructed out of two key variables: initial course load and stated intention-- two variables which were found to be the most important with respect to student persistence. A simple two-dimensional matrix, with each variable

		COURSE LOAD		
		1 (1 course)	2 (2-3 courses)	3 (4+ courses)
INTENTION	A. Certificate/ Degree/ Transfer	1A	2A	3A
	B. Job related	1B	2B	3B
	C. Personal Interest	1C	2C	3C
	D. Unsure/unknown	1D	2D	3D

Fig. 1

on an axis, was constructed, yielding twelve types (see Figure 1). In order to insure the typology be as value neutral as possible, it was decided to name each type according to its place in the matrix (i.e., 1A, 3B, etc.). The distribution among types is summarized in Figure 2. As we can see, and perhaps surprisingly, the largest single type is 3A, full-time degree-, certificate-, or transfer-oriented students. Another surprise was the small numbers of people falling into job-related and personal interest types, at all three course load levels (1B, 2B, 3B, and 1C, 2C, 3C)[1].

In formulating the success indicators, which are laid out in Figures 3 through 5, we decided that a number of values would underlie the success model. In the first place, we felt that it

DCCCD TYPOLOGY DISTRIBUTION

FALL 1989 COHORT

	Number	Percent
1A	1,093	8.6
1B	521	4.1
1C	25	0.2
1D	2,142	16.9
2A	2,117	16.7
2B	343	2.7
2C	13	0.1
2D	1,920	15.1
3A	2,924	23.0
3B	127	1.0
3C	13	0.1
3D	1,475	11.6
TOTAL	12,712	100.0

Fig. 2

is important that students perform at least a C level. Conversely, in spite of the fact that they have no negative impact on students' grade point averages, students should be encouraged not to take Ws. Another value is the importance placed

DCCCD STUDENT SUCCESS CRITERIA AND TYPE BEHAVIOR

FALL 1989 COHORT

COURSE LOAD = 1 COURSE

TYPE	SUCCESS INDICATORS	ACTUAL
1A	COMPLETION OF COURSE WITH C OR BETTER	63.7
	PERCENT OF STUDENTS RECEIVING W2	18.2
	PERSISTENCE TO NEXT LONG SEMESTER	38.6
1B	COMPLETION OF COURSE WITH C OR BETTER	61.5
	PERCENT OF STUDENTS RECEIVING W	15.7
	PERSISTENCE TO NEXT LONG SEMESTER	18.6
1C	COMPLETION OF COURSE WITH C OR BETTER	47.4
	PERCENT OF STUDENTS RECEIVING W	42.1
	MET PERCEIVED NEEDS	80.0*
1D	COMPLETION OF COURSE WITH C OR BETTER	65.8
	PERCENT OF STUDENTS RECEIVING W	17.0
	PERSISTENCE TO NEXT LONG SEMESTER	27.2
	CLARIFICATION OF GOALS OF RETURNEES	54.8

* Indicates estimate based on extrapolations from known data. As the actual figures come in they will be incorporated in the table and target ranges adjusted accordingly.

Fig. 3

on persistence to the next long semester, and ultimately to graduation or transfer. Still another is that the community college has an obligation to help students who have not done so to clarify their goals. That is why for all "unknown/unsure" students (1D, 2D, 3D) we want to know what percentage of those

who persisted clarified their goals. And we want to increase that percentage.

The success model presented here establishes under what circumstances we will take a student's word at face value and

DCCCD STUDENT SUCCESS CRITERIA AND TYPE BEHAVIOR

FALL 1989 COHORT

COURSE LOAD = 2-3 COURSES

TYPE	SUCCESS INDICATORS	ACTUAL
2A	COMPLETION OF ALL COURSES WITH C OR BETTER	43.6
	PERCENT OF STUDENTS RECEIVING W	32.8
	PERSISTENCE TO NEXT LONG SEMESTER	49.5
	TRANSFER OR COMPLETION OF DEGREE/ CERTIFICATE WITHIN 5 YEARS	15.0*
2B	COMPLETION OF ALL COURSES WITH C OR BETTER	56.2
	PERCENT OF STUDENTS RECEIVING W	22.5
	PERSISTENCE TO NEXT LONG SEMESTER	44.7
	MOVEMENT TO DEGREE/CERTIFICATE TRACK	24.6
	MET NEEDS OF EMPLOYERS	80.0*
2C	COMPLETION OF ALL COURSES WITH C OR BETTER	35.7
	PERCENT OF STUDENTS RECEIVING W	42.9
	MET PERCEIVED NEEDS	80.0*
2D	COMPLETION OF ALL COURSES WITH C OR BETTER	52.2
	PERCENT OF STUDENTS RECEIVING W	27.4
	PERSISTENCE TO NEXT LONG SEMESTER	57.1
	CLARIFICATION OF GOALS OF RETURNEES	65.9

* See Figure 3

Fig. 4

under which circumstances we will not. Note that for type 1A (Figure 3) there is no success indicator which refers to completion of a degree or certificate or to transfer to a four

year college. We felt that given the extremely low persistence rates which we found for students who register for one course in their initial semester, it is unrealistic to expect significant numbers of these to graduate or transfer, irrespective of their stated intentions. Likewise, satisfaction of perceived needs as a success indicator only becomes significant if a student indicates certain nonacademic intentions (e.g., personal interest).

DCCCD STUDENT SUCCESS CRITERIA AND TYPE BEHAVIOR

FALL 1989 COHORT

COURSE LOAD = 4+ COURSES

TYPE	SUCCESS INDICATORS	ACTUAL
3A	COMPLETION OF ALL COURSES WITH C OR BETTER	34.7
	PERCENT OF STUDENTS RECEIVING W	45.4
	PERSISTENCE TO NEXT LONG SEMESTER	74.6
	TRANSFER OR COMPLETION OF DEGREE/ CERTIFICATE WITHIN 3 YEARS	25.0*
3B	COMPLETION OF ALL COURSES WITH C OR BETTER	56.0
	PERCENT OF STUDENTS RECEIVING W	28.8
	PERSISTENCE TO NEXT LONG SEMESTER	76.0
	MOVEMENT TO DEGREE/CERTIFICATE TRACK	48.9
	COMPLETER WITHING 2 YEARS	60.0*
3C	COMPLETION OF ALL COURSES WITH C OR BETTER	60.0
	PERCENT OF STUDENTS RECEIVING W	20.0
	PERSISTENCE TO NEXT LONG SEMESTER	60.0
	MET PERCEIVED NEEDS	80.0*
3D	COMPLETION OF ALL COURSES WITH C OR BETTER	41.9
	PERCENT OF STUDENTS RECEIVING W	39.8
	PERSISTENCE TO NEXT LONG SEMESTER	75.0
	CLARIFICATION OF GOALS OF RETURNEES	73.6

* See Figure 3

Fig. 5

Looking at community college student success in this way represents a radical departure from most conceptualizations which unfalteringly take a student's word at face value ("If the student was satisfied, then it was a successful experience.")[3].

The Next Steps

In a very real way the easiest part of this enterprise was formulating the typology. The more significant, and harder, task was to use the typology on the DCCCD's colleges to improve student success.

In the first place, a number of prosaic decisions had to be made. A cohort-based typology implies the tracking of that cohort, from semester to semester, as it moves through the educational pipeline. The question that was raised was how long should a given cohort be tracked? After some deliberation, it was decided that each cohort would be tracked for two years or four long semesters; at any given moment, four separate cohorts would be tracked. This was done for two reasons: a) from the data we had reviewed as part of the development of the typology, the crucial semesters in determining students' ultimate persistence appear to be the earlier ones; b) tracking more than four cohorts at any given time would have generated more information than the individual colleges, most with no institutional research capability of their own, could absorb (see below). It was also decided that we would not track summer cohorts because these were much smaller and had characteristics much different from their fall and spring counterparts[4].

Another question which had to be decided was whether, as a result of subsequent behavior, students could change their type. That is, could a student who starts out as a 3D (full-time, undecided/unknown) become a 3A upon deciding to pursue a degree, certificate or transfer? We decided that the answer to this question would be no. If we allowed students to change categories willy-nilly it would then make it very difficult, if not impossible, to track the evolution of a particular type of students over time. Furthermore, this decision would have no impact whatsoever on students because the typology is not a method of evaluating students but one of evaluating institutions with respect to their students.

What the Data Look Like

Figures 6 through 8 show three semesters' worth of tracking data for the Fall 1989 cohort. Although I will not go into a detailed analysis of these data, a number of interesting points becomes evident when the student data are disaggregated in this way. In the first place, note that even before the end of the fourth semester in this cohort's trajectory, over 30% of full-time students expressing intention of graduating or transferring (3A students, Figure 8) have done so. Although not shown in the tables, the overwhelming majority of these have transferred. This bears out the contention that many transfer oriented students do not bother to earn an associate degree before transferring to a baccalaureate institution.

Furthermore, these data bear out the contention put forth in Aquino 1990 that overall, initial course load is a greater

determinate of subsequent persistence than stated intention. The reader will note that some 35% of students who had registered for full time loads in their initial semester but indicated uncertainty of intention (type 3D, Figure 8) had persisted to the Spring 1991 semester. At the same time only some 20% of those students indicating an intention of earning a degree, certificate, or transferring and who registered for a single course in their initial semester (type 1A, Figure 6) persisted to Spring 1991. Indeed, 3D students persisted to their second semester (Spring 1990) at a marginally better rate than 3A

DCCCD TYPOLOGY REPORT

FALL 1989 COHORT

COURSE LOAD = 1 COURSE

TYPE	SUCCESS INDICATORS	SPR90	FALL90	SPR91
1A	PERCENT OF STUDENTS RECEIVING W	18.2	19.3	29.1
	PERSISTENCE TO PRESENT SEMESTER	38.6	23.1	19.8
	ORIGINAL FALL 89 NUMBER: 1,093			
1B	PERCENT OF STUDENTS RECEIVING W	15.7	22.7	20.6
	PERSISTENCE TO PRESENT SEMESTER	18.6	12.8	8.8
	ORIGINAL FALL 89 NUMBER: 521			
1C	PERCENT OF STUDENTS RECEIVING W	42.1	14.3	80.0
	ORIGINAL FALL 89 NUMBER: 25			
1D	PERCENT OF STUDENTS RECEIVING W	17.0	17.0	20.1
	PERSISTENCE TO PRESENT SEMESTER	27.2	10.9	13.2
	CLARIFICATION OF GOALS OF RETURNEES	54.8	71.0	66.6
	ORIGINAL FALL 89 NUMBER: 2,142			

Fig. 6

students (Figure 8)! Also note that of the 3D students who persisted to Spring 1991, over 90% had clarified their goals.

Another interesting pattern concerns 2B and 3B students (Figures 7 and 8). That is, students who register for 2-3 courses or a full load, respectively, and declare a job related matriculation objective with no intention of earning a degree, or certificate or transferring. We see that a) at least for full-time students, their persistence rates are comparable to those of other full-time students, and b) for both 2B and 3B students who

DCCCD STUDENT TYPOLOGY REPORT

FALL 1989 COHORT

COURSE LOAD = 2-3 COURSES

TYPE	SUCCESS INDICATORS	SPR90	FALL90	SPR91
2A	PERCENT OF STUDENTS RECEIVING W	32.8	35.0	33.9
	PERSISTENCE TO PRESENT SEMESTER	49.5	30.2	24.3
	TRANSFER OR COMPLETION OF DEGREE/ CERTIFICATE			18.7
	ORIGINAL FALL 89 NUMBER: 2,142			
2B	PERCENT OF STUDENTS RECEIVING W	22.5	21.0	38.1
	PERSISTENCE TO PRESENT SEMESTER	44.7	25.2	13.5
	MOVEMENT TO DEGREE/CERTIFICATE TRACK	24.6	47.1	55.6
	ORIGINAL FALL 89 NUMBER: 343			
2C	PERCENT OF STUDENTS RECEIVING W	42.9	28.6	0.0
	ORIGINAL FALL 89 NUMBER: 13			
2D	PERCENT OF STUDENTS RECEIVING W	27.4	24.7	35.1
	PERSISTENCE TO PRESENT SEMESTER	57.1	28.0	23.1
	CLARIFICATION OF GOALS OF RETURNEES	65.9	83.0	83.1
	ORIGINAL FALL 89 NUMBER: 1,920			

Fig. 7

persist to Spring 1991 over 50% of the former and 80% of the latter move to a degree/certificate track.

Another evident pattern is that, with the exception of students carrying a single course in their initial semester (1A, 1B, 1C, 1D), the rates at which students receive at least one W does not change much over their college careers. This suggests that rather than being a haphazard or accidental process,

DCCCD STUDENT TYPOLOGY REPORT

FALL 1989 COHORT

COURSE LOAD = 4+ COURSES

TYPE	SUCCESS INDICATORS	SPR90	FALL90	SPR91
3A	PERCENT OF STUDENTS RECEIVING W	45.4	47.8	47.0
	PERSISTENCE TO PRESENT SEMESTER	74.6	46.3	39.4
	TRANSFER OR COMPLETION OF DEGREE/ CERTIFICATE			31.0
	ORIGINAL FALL 89 NUMBER: 2,924			
3B	PERCENT OF STUDENTS RECEIVING W	28.8	27.4	40.0
	PERSISTENCE TO PRESENT SEMESTER	76.0	43.6	31.5
	MOVEMENT TO DEGREE/CERTIFICATE TRACK	48.9	83.3	82.1
	ORIGINAL FALL 89 NUMBER: 127			
3C	PERCENT OF STUDENTS RECEIVING W	25.0	12.5	20.0
	PERSISTENCE TO PRESENT SEMESTER	61.5	61.5	38.5
	ORIGINAL FALL 89 NUMBER: 13			
3D	PERCENT OF STUDENTS RECEIVING W	39.8	43.6	44.3
	PERSISTENCE TO PRESENT SEMESTER	75.0	45.2	35.3
	CLARIFICATION OF GOALS OF RETURNEES	73.6	89.8	93.3
	ORIGINAL FALL 89 NUMBER: 1,475			

Fig. 8

withdrawing from a course may be part of a deliberate strategy to maximize one's grade point average by dropping the course where one is weakest.

Finally, these data add further evidence to the idea that full-time students, in the aggregate, behave in a fundamentally different way from part-time students. Full-time students' persistence rates do not show any patterns with respect to stated intention. This is in contrast to part-time students. Among part-timers this persistence rate patterning is especially evident with respect to students who indicated job related intentions (1B, 2B). Persistence of these students is significantly lower than their counterparts who declared intention of pursuing a degree, certificate, or transfer (1A, 2A). Presumably, these 1Bs and 2Bs met their objectives and simply stopped attending.

Use of the Typology at the Colleges

In keeping with the decentralized nature of the DCCCD, the seven colleges which comprise it were free to develop their own strategies for the use of the typology. As a result, its use has been uneven across the district. In all cases certain resistance had to be overcome at the college level.

Much of the initial resistance to the typology on the campuses must be seen in light of the suspicion toward assessment, found in many of the nation's campuses, that somehow the results would be misused. Indeed, a vice president at one the DCCCD colleges confided to me that at his campus there is a resistance to any kind of quantitative measures of student success. Added to this dynamic was an issue peculiar to multi-

college/multi-campus districts. Although the typology was developed by a committee with membership from all the district's colleges, by many on the colleges it was still seen as something developed by the district office and therefore suspect. These factors contributed to an attitude of a priori resistance that was evident to me at a number of faculty workshops I was invited to give at some of the colleges.

An early bone of contention was the C or better success criterion (compare Figures 3 to 5 with Figures 6 to 8). Faculty complained that this would lead to grade inflation. In fact, the rationale behind this criterion was not decreasing the numbers of Ds and Fs, which are relatively small, but decreasing the number of Ws, which are relatively large. It was felt that in order to avoid conflict over what we thought was a red herring, it was better to delete this criterion. In any case, the typology would still keep track of the students who got Ws (see Figures 3 to 8).

In addition to these resistance issues, there have been other barriers to the effective use of the typology on the campuses. One of the most prevalent, at least in the beginning, was a lack of understanding of what a cohort of students is. We found that most community college professionals are used to taking a cross-sectional look at a student body but not a longitudinal one. This has proved to be a relatively tractable problem that is being resolved through staff development efforts.

A more intractable set of problems relates to the amounts and complexity of the data presented. Note that Figures 6 through 8 summarize the data for only one cohort and that at any given time four cohorts will be tracked. Figures 6 to 8 are also for

the district as a whole. The data are also disaggregated by college. For someone not given to finding patterns in columns of numbers (as are most non-institutional researchers) the reports can seem like alphabet soup; the implications of the data are not apparent. The fact that the DCCCD Office of Research serves seven different colleges only compounds the problem because that office does not have the resources to perform seven different detailed analyses of seven sets of data. Steps are being taken to remedy this and make the presentation of data easier to understand for the lay person. One avenue is to explore graphic presentation of data. To that end, my office is working with the Vice Presidents of Student Development of the seven colleges to devise the best method of doing this. I will also be looking for ways to enhance the ease of understanding of tabular presentations of data.

Given these considerations, it is not surprising that the colleges which have made the best use of the data are those which saw fit to dedicate someone to wade through the reports and find patterns in the numbers which respect to their college. And those colleges have found the data quite valuable.

At one college, for example, the typology is being used by its Student Success Committee. In particular it is being used as a decision making tool to aid in the allocation of scarce resources. Specifically, they decided that they were going to target certain types of students for interventions. They use the reports which are produced every semester to see if these interventions are having the desired effect.

However, the greatest impetus for the use of the typology on the colleges is coming from an external source: the Southern Association of Colleges and Schools. At present the colleges (which are being reaccredited individually) are at the initial stages of their self-study processes. The self-study teams have found that the typology is very useful in establishing institutional effectiveness. Although the implications of the typology for establishing institutional effectiveness are fairly apparent, it is still too early too early to say exactly how each college will use it.

Conclusion

The actual implementation of the typology is still in its infancy. One obvious paradox that we have confronted is the need for the data to be subtle enough to reflect the full diversity of community college students while simple enough to be understandable by non-institutional researchers. Another issue is the resistance that still exists on campuses to any type of outcomes assessment. This resistance might continue to be insuperable were it not for the increased pressures of external constituencies (e.g., accrediting agencies).

However, rather than establishing institutional effectiveness, my contention continues to be that the chief value of the typology is that it allows us get much more subtle idea about the characteristics of our students with respect to success measures and therefore allowing us to enhance their success.

Notes

1. Because of a programming error many people reporting "personal interest" during Fall 1989 registration were instead classified as "unknown". This problem was corrected for the Spring 1990 registration, yielding a more accurate count. Spring 1990 data show that although people in personal interest types were greater in number than shown in Figure 2, they only accounted for just over 3%, across all course load levels, of that cohort.

2. As in many other institutions, a W grade indicates that the student withdrew from the class by the withdrawal deadline (about the middle of the semester). At the DCCCD Ws do not affect a student's grade point average.

3. In this context, it is interesting to note that of the thousand-odd 1A students, approximately 200 of them indicated that they wanted to earn an associate degree and that they expected to earn it in <u>two years</u>! At the rate of one course per semester, it would take on the order of ten years to earn a "two year" degree. So much for taking a student's word at face value.

4. In addition to students coming to community college for the more stereotypical reasons, a significant proportion of summer cohorts are full-time university students who are home for summer vacation and wish to pick up some extra credits. We felt that since these students were such a special case and were so heavily represented in summer cohorts that our time and efforts, for the moment, would be better spent in concentrating on fall and spring cohorts.

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Aquino, Felix J., 1990. "A Typology of Community College Student Behaviors: Defining Student Success and Student Failure". ERIC Clearinghouse # ED 321678.